



KHYBER COLLEGE OF DENTISTRY

BACHELOR OF DENTAL SURGERY CURRICULUM

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PREFACE

The Pakistan Medical & Dental Council is a statutory body constituted by the Federal Government under the Pakistan Medical & Dental Council Ordinance, 1962. Presently controlled by the Council. One of the main functions of the Council is to lay down the minimum standard of basic and higher qualifications in Medicine & Dentistry. The Council has been empowered to:

- To prescribe a uniform minimum standard of courses of training for obtaining graduate and postgraduate dental qualification.
- To prescribe minimum requirements for the content and duration of courses of studies for the degree of BDS.
- To prescribe condition for admission to courses of training for the degree of BDS.
- To prescribe the standards of examinations method of conducting the examination.

For this purpose senior teachers of all specialties were invited & draft curriculum was finalized after due consideration of the comments and suggestions received from the Universities and Colleges where the subject under consideration is taught. The Curriculum prepared by the Curriculum Revision Committee of Higher Education Commission was duly approved by Council & is being circulated for implementation by the concerned institutions on. This Curriculum is to be followed by all the Dental Colleges and Universities in Pakistan to get registration of the Council for Dental practitioners.

(PROF.DR.ALTAFA ALI G. SHAIKH)
ADVISER (Academics/R&D)

(DR.M. SOHAIL KARIM HASHMI)
SECRETARY

CURRICULUM OF BDS **(FOUR YEARS)**

A meeting of NCRC B.D.S. was held on 19.8.2003 to restructure the B.D.S. curriculum into four years from five years as decided in the Council Session held on 29th & 30th April 2003. The Committee considered the proposals of subjects specialists in various disciplines of Dentistry and discussed the following:-

1. Nomenclature of various subjects
2. Duration of BDS course
3. Year-wise distribution of subjects
4. Distribution of sub-specialties
5. Examination system restructuring
6. Internal assessment factors
7. Allocation of credit hours
8. First draft curriculum of various subjects taught in BDS.
9. Books recommended

Following recommendations were proposed unanimously:-

1. Nomenclature of Oral Surgery should be changed to Oral and Maxillofacial Surgery.
2. Prosthetics should be called Prosthodontics
3. Conservative Dentistry be called Operative Dentistry
4. Dental Anatomy should be renamed as Oral Biology and Tooth Morphology
5. Dental Chemistry should be called Science of Dental Materials
6. It was also proposed that Periodontology, Gerontology and Paedodontics are the best descriptive terms.

YEAR WISE DISTRIBUTION OF SUBJECTS:

1 st Year	2 nd Year	3 rd Year	Final Year
General anatomy Histology and Embryology	General Pharmacology	Medicine	Prosthodontics
Physiology	General Pathology	Surgery	Operative Dentistry
Biochemistry	Oral Biology and Tooth Morphology	Oral Pathology	Oral and Maxillofacial Surgery
Science of Dental Materials	Community and preventive Dentistry	Periodontology and Oral Medicine	Orthodontics
Pak Studies and Islamiat / Ethics			

It was felt that Oral Medicine and Periodontology should be independent subjects but till the availability of subject specialists they could be taught together. Those institutions where separate subject specialists are available with developed departments may teach and examine these subjects independently.

Where the department of Pediatric Dentistry with qualified staff is available there will be a separate examination of the subject in final year BDS.

Examination System

Examination System was restructured as following: -

1. All papers should consist of MCQs and essay type question.
2. Internal evaluation of each subject carries 10% marks of the total to be adjusted in practical marks.
3. The question paper should be according to the table of specification provided in curriculum of that subject.

SCHEME OF STUDIES

YEAR AND SUBJECT WISE DISTRIBUTION OF MARKS

FIRST PROFESSIONAL BDS

<u>SUBJECTS</u>	<u>Theory</u>	<u>Practical</u>
General Anatomy	100	100
General Physiology	100	100
Biochemistry	50	50
Science of Dental Materials	100	100
Total	350	350 = 700

SECOND PROFESSIONAL BDS

<u>SUBJECTS</u>	<u>Theory</u>	<u>Practical</u>
Pathology	100	100
Pharmacology	100	100
Oral Biology and Tooth morphology	100	100
Community and Preventive		
Dentistry	50	50
Total	350	350 = 700

THIRD PROFESSIONAL BDS

<u>SUBJECTS</u>	<u>Theory</u>	<u>Practical</u>
General Surgery	100	100
General Medicine	100	100
Oral Pathology	100	100
Periodontology/Oral Medicine	100	100
Total	400	400 = 800

Note: Periodontology/Oral Medicine will share equal weightage of marks in Theory and practical i.e. 50% each.

FINAL PROFESSIONAL BDS**SUBJECTS**

	Theory	Practical
Prosthodontics	100	200
Operative Dentistry	100	200
Oral and Maxillofacial Surgery	100	200
Orthodontia	100	200
Total	400	800 = 1200

ALLOCATION OF CREDIT HOURS**FIRST PROFESSIONAL BDS**

	LECTURE HOURS	PRACTICAL HOURS
Anatomy	100	300
Physiology	50	200
Biochemistry	50	120
Science of Dental Materials	75	250
Pakistan Studies/ Islamic Studies	25	-
Information Technology	-	30
Total	300	900 = 1200 hrs

SECOND PROFESSIONAL BDS**SUBJECTS**

	LECTURES HOURS	PRACTICAL HOURS
General Pathology	50	200
General Pharmacology	50	200
Oral Biology and Tooth morphology	60	100
Community and Preventive Dentistry	40	200
Junior Operative/Dental Material Medica	25	110
Junior Prosthodontics	25	110
Information Technology	-	30
Total	250	950 = 1200 hrs

Note: Paedodontics will have 25% weightage of Operative Dentistry where ever fully operational department with qualified staff exists.

THIRD PROFESSIONAL BDS

SUBJECTS	LECTURES AND DEMONSTRATION	PRACTICAL AND CLINICAL HOURS
General Surgery	50	150
General Medicine	50	150
Oral Pathology	50	100
Oral Medicine & Diagnosis	50	75
Periodontology	50	125
Prosthodontics	30	120
Operative Dentistry	20	80
Oral and Maxillofacial Surgery	30	120
Total	330	920 = 1250 hrs

NOTE: - Clinical hour of General Medicine and Surgery may be extended to evening ward duties in addition to allotted hours.

FINAL PROFESSIONAL BDS

SUBJECTS	LECTURES AND DEMONSTRATION	PRACTICAL HOURS
Prosthodontics		
Complete Dentures	40	
Fixed Prosthodontics	20	250
Occlusion 5		
Maxillofacial Prosthodontics	5	
Gerodontology	5	
Operative Dentistry		
Operative	20	
Endodontics	10	
Paedodontics	10	
Crowns	10	250
Radiology	05	
Oral and Maxillofacial Surgery		
Oral Surgery	60	
Anesthesia	10	
Forensic Dentistry	05	250

Orthodontia

Orthodontics	40	
Radiology(Cephalometry)	05	250
<hr/>		
Total	250	1000 = 1250 hrs

KHYBER COLLEGE OF DENTISTRY

DETAILS OF COURSES

FIRST PROFESSIONAL BDS

A. GENERAL ANATOMY

1. Brief history of Anatomy. Different disciplines of the subject.
2. Anatomical nomenclature-descriptive terms.
3. Skeletal system-bones.
 - Axial Skeleton
 - Appendicular Skeleton
 - Functions of bone
 - Classification on the basis of shape, development, region and structure.
 - General concepts of development & ossification of bones
 - Parts of young bones
 - Blood supply of long bones
 - Applied Anatomy of bones
4. Joints
 - Structural classification
 - Regional classification
 - Functional classification
 - Characteristics and classification of Synovial joints
 - Movements of Synovial joints
 - Anatomy of joints with reference to dislocation, sprain and inflammation
5. Muscle
 - Parts of a muscle
 - Classification
 - Blood supply and nerve supply of muscle
 - Neuromuscular junction
 - Applied anatomy of muscle with reference to spasm, paralysis, atrophy and regeneration.
6. Cardiovascular system
 - Introduction to C.V.S
 - Types of circulation
 - Anastomosis
7. Introduction to lymphatic system
 - Lymph node

- Lymph capillary
 - Functions
8. Nervous system
 - Introduction to CNS
 - Different parts of CNS with their brief functions
 - Peripheral nervous system (cranial and spinal nerves)- introduction
 9. Autonomic nervous system
 - Introduction to parasympathetic and sympathetic nervous system
 10. Skin and Fascia
 - Skin, superficial and deep fascia, introduction
 11. Techniques to study Anatomy
 - Introduction to radiographs
 - Radio opaque media
 - Special X-Ray techniques like Barium Meal, Angiography, Ultrasound, C.T. Scan and MRI.

GENERAL HISTOLOGY

- Histology will be taught concurrently with Anatomy throughout the course.
 - Underlying principles of histology techniques and staining specific tissues should be explained. Most of the teaching will be done on stained and mounted sections and every type of normal tissue will be covered.
1. Cell
 - Cell as a whole
 - Cell Membrane
 - Interior of cell
 - Nucleus
 2. Microscopy
 3. Epithelial tissues
 4. Connective tissue
 5. Cartilage
 6. Bone
 7. Muscular tissue
 8. Nervous tissue & Nervous system
 - Cerebral cortex
 - Cerebellar cortex
 - Spinal cord
 9. Lymphoid organ
 10. Circulatory system
 11. Integument

GENERAL EMBRYOLOGY

Embryology should be taught with the object of making students understand and grasp those fundamental principles, which result in better comprehension of the structural organization in the body. Stress should be laid on those developmental processes such as growth and differentiation, which have a direct bearing on clinical subjects. The genesis of congenital malformations should be one of the chief aims. All details should be kept on the essential outline.

1. Male & female reproductive systems.
2. Cell Division and Gametogenesis
3. Fertilization, cleavage, blastocyst formation and implantation
4. Development during second week
5. Development during third week
6. Embryonic period
7. Fetal period
8. Fetal membrane (amniotic cavity, yolk sac, allantois, umbilical cord and placenta)
9. Introduction to Genetics and Teratogenesis
10. Perinatology

GROSS ANATOMY

During study of Gross Anatomy, emphasis should be given on applied points, radiological anatomy, surface anatomy and cross-sectional anatomy.

REGION TO BE COVERED IN EACH PART

PART-I

- GENERAL ANATOMY
- GENERAL HISTOLOGY
- GENERAL EMBRYOLOGY including teratogenesis
- UPPER LIMB} Introduction
- LOWER LIMB} Introduction
- THORAX

PART – II

- SPECIAL HISTOLOGY
- SPECIAL EMBRYOLOGY
- ABDOMEN
- HEAD & NECK
- NEUROANATOMY

BOOKS RECOMMENDED

Latest editions of the books recommended should be consulted.

ANATOMY

1. GRAY'S ANATOMY to be used as a reference book
2. CUNINGHAM'S MANUAL OF PRACTICAL ANATOMY
3. CLINICAL ANATOMY BY SNELL'S
4. CLINICALY ORIENTED ANATOMY BY K.L.MOORE

HISTOLOGY

1. JANCQUERA TEXTBOOK OF HISTOLOGY
2. COLOURD ATLAS OF HISTOLOGY BY DEFIERO

EMBRYOLOGY

1. LANGMAN'S EMBRYOLOGY
2. CLINICALY ORIENTED DEVELOPMENT ANATOMY BY K.L.MOORE

RECOMMENDATIONS

Learning in the anatomy should be through dissection/dissected parts/models.

Evaluation should consist of: -

1. Continuous internal assessment
2. MCQs
3. Short essay questions
4. Viva voce examination

SPECIAL HISTOLOGY

1. The digestive system

- The oral cavity
- Tongue, Teeth, Gums, Pharynx, Hard palate, Soft palate and lips.
- Esophagus
- Salivary glands

2. The respiratory system

- Nasal cavity, paranasal sinuses, larynx and trachea
- Bronchi and lungs

1. The endocrine system

- Pituitary
- Thyroid and parathyroid
- Adrenal
- Pineal body

SPECIAL EMBRYOLOGY

1. Development of Head & Neck
 - Tongue
 - Thyroid
 - Pituitary
 - Upper respiratory system
 - Development of face and palate
2. The digestive system
3. The respiratory system
4. The cardiovascular system
5. The musculo-skeletal system
 - Development of skeleton
 - Development of muscles
6. Special Senses
7. Development of nervous system

GROSS ANATOMY

During study of Gross Anatomy, emphasis should be given on applied points, radiological anatomy, surface anatomy and Cross-sectional anatomy.

- HEAD & NECK (In detail)
- Brain, limb, Thorax, Abdomen & Pelvis. (General consideration)

B - PHYSIOLOGYBasic Concepts

General Physiology / Cell
Functional organization of human
body

Homeostasis

Control systems in the body
Cell membrane and its functions
Transport through cell
membrane Genetics

Blood

Composition and General
Functions Plasma proteins
Red Blood Cell (Erythropoiesis)
Haemoglobin & Blood
Indices, Iron metabolism, Fate of Hb
White Blood Cells
Leucopoiesis, functions
Platelets
Haemostasis

Blood groups
Transfusion & complications
Reticuloendothelial systems, spleen

Nerve and muscle

The neuron-structure & functions
Properties of Nerve Fibers
Physiology of action Potential
Including compound action potentials
Conduction of Nerve Impulse, Nerve
Degeneration and regeneration
Synapses
Structure of the muscle
Skeletal muscle contraction
Isometric and isotonic contraction
Smooth muscle contraction
Neuromuscular Transmission

Clinical / Applied Concepts

Abnormalities of the cell &
its organelles

Anemia
Blood indices in various
disorders
Leucopoiesis, Leucocytosis
Thrombocytopaenia
Clotting disorders
(Haemophilia etc)
Blood grouping / cross Blood
matching & significance
immunity

Nerve Injury

Rigor Mortis & Contractures

Myasthenia Gravis

Excitation-contraction coupling
 Motor Unit
 Neuromuscular Blockers

Gastrointestinal Tract

Structure and General Functions
 Enteric nervous system (Gut Brain)
 Mastication, Swallowing and their Control
 Functions and movements of Stomach
 Functions and movements of Small intestine
 Functions and movements of large Intestine
 Hormones of GIT
 Vomiting and its pathway
 Defecation and its pathway
 Functions of Liver

Dysphagia, achalasia of esophagus
 Examination of abdomen, Peptic Ulcer, pancreatitis
 Gastric function tests
 Vomiting and its effects
 Diarrhea
 Jaundice, Liver function tests

Cardio Vascular System

Introduction to heart & circulation
 Physiology of cardiac muscle
 Action potential in atrial & ventricular Muscle and pacemaker potential
 Regulation of cardiac functions
 Cardiac impulse-origin & propagation
 Cardiac cycle- various events
 ECG-Recording & interpretation
 Functional types of blood vessels
 Local control of blood flow
 Systemic circulation, Characteristics and control
 Regulation of peripheral resistance
 Arterial pulse

Correlation of cardiac cycle with ECG & heart sounds

Jugular venous pulse

Arterial blood pressure (short/long Term regulation)	Radial/other pulses
Cardiac output (regulation/measurement)	Hypertension, types & effects
Heart sound/murmurs	
Venous return & its regulation	
Coronary circulation	
Pulmonary circulation	
Cerebral circulation	
	Types of shock
Cardiovascular changes during exercise	
<u>Respiratory System</u>	
Organization / functions of Respiratory Tract	
Functions of Lungs (respiratory & non Respiratory)	Types of respiration (intrapleural pressure, effusion, pneumothorax)
Mechanics of Breathing	
	Lung function tests spirometry)
Protective reflexes	
Lung volumes and capacities	Obstructive/Restrictive lung Disease (FEV1 / FVC)
Dead space	
Diffusion of Gases (composition)	Abnormal Ventilation / perfusion
Ventilation / perfusion	
Transport of CO ₂ in blood	
Regulation of respiration (Nervous / Chemical)	Respiratory
Abnormal breathing	Asphyxia
Hypoxia-types and effects	Hypoxia, cyanosis, dyspnea
Physiology of Cyanosis	Artificial respiration
Physiology of high altitude,	Oxygen therapy
Oxygen debt	
Exercise	

ANNEXURE FOR PHYSIOLOGY

Recommended books

1. Text book of Medical physiology by Arthur C. Guyton.
2. Review of Medical physiology by Ganong.
3. N.M.S text book of physiology.

RECOMMENDED MODES OF ASSESSMENTS

Continuous Internal Assessment (as recommended by PM&DC).

Theory

- a. Descriptive: consisting of short essay questions and short notes.
- b. Multiple choice questions (MCQ's)

Oral & Practicals

- a. Viva voce: it should be about definitions, normal values, mechanisms, interpretations. Drawing / labelling of graphs / diagrams. Conceptual questions should be asked.
- b. Practical: Two experiments to be performed by the student OSP (objective structured practical examinations) should be encouraged.

Nervous System

Organization of Nervous system

Classification of nerve fibers

Properties of Synaptic transmission

Types and function of sensory

Receptors

Functions of spinal cord, ascending

Tracts Reflex action/muscle tone

Muscle spindle / muscle tone

Tactile, temperature and pain

Sensations structure of cerebral

Cortex

Sensory Cortex

Motor Cortex

Motor pathways, pyramidal & extra

Pyramidal)

Interpretation of Reflexes

UMN/LMN Lesion-features and

Localization

Basal Ganglia, connections and functions of Vestibular Apparatus/Regulation of Posture & Equilibrium Reticular formation	Parkinsonism and other lesions Basal ganglia cerebellar Disorder
Physiology of sleep / EEG	
Physiology of speech Thalamus- Nuclei & functions	
Hypothalamus & limbic System	Lesion of Hypothalamus
Cerebrospinal fluid	
Regulation of body temperature	
Functions of skin	Hydrocephalus
Autonomic Nervous system	
Special senses	
Physiology of smell	Olfaction / taste abnormalities
Physiology of taste	
<u>Endocrinology</u>	
General principles (classification, Mechanism of action, feed back control)	Acromegaly, Gigantism
Biosynthesis, transport, metabolism, actions and control of secretion of hormones of;	Hormonal assay
Hypothalamus	
Anterior Pituitary	Dwarfism
Posterior Pituitary	Panhypopituitarism
Thyroid gland	
Parathyroid, calcitonin	Diabetes insipidus
Adrenal Medulla	Syndrome, of inappropriate ADH Secretion
	Myxoedema, Creatinism, Thyrotoxicosis
Adrenal Cortex	
Pancrease	Pheochromocytoma
GIT	Cushing's syndrome, Cohn's disease
	Addison's disease, Syndrome
Kidney	Diabetes Mellitus & Hypoglycemia
Physiology of growth (Head & Neck)	

EXPERIMENTAL PHYSIOLOGY

Hematology

Study of the microscope

Determination of : -

- Haemoglobin (Hb%)
- Erythrocyte Sedimentation Rate (ESR)
- Packed cell volume (PVC) Haematocrit
- Bleeding time (BT)
- Clotting time (CT)
- Blood Groups
- Study of Neubauer chamber
- RBCs Count
- Red cell indices
- WBCs Count
- Differential leucocyte Count (DLC)
- Osmotic fragility of chest
- Demonstration of prothrombin time and thrombin time

Respiratory System

- Measurement of Pulmonary volumes and capacities (Spirometry)
- Stethography
- Nervous System
- Examination of superficial reflexes
- Examination of deep reflexes
- Examination of sensory, motor system
- Clinical Examination of cranial nerves

Cardiovascular System

- Cardiopulmonary resuscitation
- Examination of arterial pulse
- ECG recording/interpretation
- Measurement of arterial blood pressure
- Effect of exercise & posture on BP
- Examination of Apex Beat
- Heart Sounds – auscultation of normal sounds/murmurs

Special Senses

- Taste sensation
- Recording of body temperature

C: BIOCHEMISTRY**Introduction of Biochemistry:****Biochemistry of the Cell**

- a) Introduction to cell (Biochemical point of view)
- b) Scientific methods to study the cell Biochemistry
- c) Biochemical composition of the cell

Biochemistry of the Cell and Body Fluids:

- a) Ionization of water & weak acids, Bases
- b) Concept of Ph, and pH scale
- c) Dissociation constant & titration curve of weak acids, the concept of pK values
- d) Buffers, their mechanism of action
- e) Henderson-Hasselbalch Equation (No derivation)
- f) Importance of selectively permeable membranes, Osmosis, Osmotic pressure, surface tension, viscosity & their importance related to body fluids

Carbohydrates:

- a) Definition, biochemical function and classification
- b) Structure and functions of Monosaccharides, and their derivatives
- c) Disaccharides, their important examples
- d) Oligosaccharides, their important combination with other macromolecules
- e) Polysaccharides, their important examples and biochemical role
- f) The biochemical importance of carbohydrates

Proteins:

- a) Definitions, Biomedical importance and classification of proteins Based on
 - Physiochemical properties
 - Functional
 - Nutritional
 - Structural

- b) Amino acids, their structure, properties and functions
- c) Classification and nutritional significance of amino acids
- d) Structure of proteins and their significance
- e) Separation of proteins e.g. salting out, Electrophoresis, Chromatography, Centrifugation
- f) Immunoglobulins and its biomedical significance
- g) Plasma proteins & their clinical significance

Nucleotide and Nucleic Acid:

- a) Chemistry and structure of nucleotides and their biochemical role
- b) Nucleotides, structure, their derivatives and their biochemical role
- c) Nucleic acids, their types, structure and functions

Lipids:

- a) Definition, biomedical function
- b) Classification of lipids
- c) Phospholipids, Glycolipids, Sphingolipids and their Biochemical signation
- d) Fatty acids, chemistry, classification and biochemical function
- e) Essential fatty acids
- f) Eicosanoids, their classification and functions in health and disease
- g) Steroids, Sterol e.g Cholesterol, their chemistry, functions and clinical Significance
- h) Lipid peroxidation and its Significance

Biological Membrane:

- a) Biochemical composition
- b) Biochemistry of cell membrane, chemical composition, importance of Lipid and proteins in membranes, chemistry of signals and receptors
- c) Biochemistry of membrane transport mechanism, active transport, Passive transport, simple and facilitated diffusion

Enzymes:

- a) Introduction, definition, mechanism of catalysis
- b) Coenzymes, co-factors
- c) Isoenzymes, their clinical importance
- d) Factors affecting enzymes activity, Michaelis-Menten Equation, (no derivation of equations)
- e) Enzyme inhibitors and their classification and biomedical importance
- f) Application of enzyme in clinical diagnosis and therapeutic use

Porphyryns & Hemoglobin:

- a) Chemistry and biosynthesis of porphyryns and its disorders (porphyrias)
- b) Structure, functions and types of hemoglobin
- c) Oxygen binding capacity of hemoglobin, factors affecting and regulating the oxygen binding capacity of hemoglobin
- d) Degradation of heme, formation of Bile pigments, its types, transport and excretion
- e) Hyperbilirubinemia, their biochemical causes and differentiation, Jaundice and its types
- f) Hemoglobinopathies (HP-S, Thalassemia etc) and their biochemical causes

Vitamins:

- a) Introduction, classification
- b) chemistry, biochemical functions, deficiency manifestations, daily allowances and source of water soluble and fat-soluble vitamins
- c) Hypervitaminosis

Biochemistry of Digestive Tract:

- a) Introduction of digestion and absorption
- b) Introduction, composition, functions, daily secretion, stimulants and depressants of:
 - Saliva
 - Gastric Juice & HCL
 - Pancreatic Juice
 - Bile Juice
 - Succus Entericus
- c) Digestion and absorption of carbohydrates, proteins, nucleic acid and lipids.
- d) Biochemical disorders of GIT, e.g. achlorhydria, peptic ulcers, Lactose intolerance, cholelithiasis and related disorders.(Introductions)

Mineral & Trace Elements:

Classification and Biochemical role of:

- Macro minerals (Na,K,Ca, Cl, PO₄)
- Micro minerals (Fe,Zn,Mg,Se,I,Cu,Cr,Cd.Mn)

Laboratory Practicals

1. Introduction to use laboratory facilities / equipment's
2. Basic techniques and fundamental informations
3. Preparation of solutions-Normal solution and Normal saline
4. Experiments on Carbohydrates qualitative analysis
5. Experiments on proteins- qualitative analysis
6. Experiments on Fats- qualitative analysis
7. Chemical analysis of Urine-Normal and abnormal specimens

D: SCIENCE OF DENTAL MATERIALS

1. Introduction to Dental Materials

2. Physical properties of materials:-
 - a) Characterization of solid surfaces
 - b) Adsorption, absorption, and sorption.
 - c) Surface tension, wetting, capillary rise
 - d) Forces involved in denture retention
3. Thermal, Electrical and other related properties of dental materials
4. Mechanical properties i.e. stress, strain, stress/strain relationship and other related properties.
5. Classification of dental materials on their basis of chemistry eg. example Polymers, Ceramics, Metals, Alloy and Composites.
6. Impression materials in all respects and duplicating materials.
7. Duplicating materials
8. Gypsum products and investment materials.
9. Investment materials
10. Dental Waxes .
11. Separating media used in dentistry
12. Polymers:-
 - Requirements of denture base materials.
 - Properties of Acrylic Resin as a denture base materials, their composition, manipulation and processing.
 - Alternative denture base materials.
 - Artificial teeth.
 - Types of Acrylic Resin polymerization i.e. heat cured

- Acrylic denture plastics, chemically accelerated plastics, fluid resin acrylic denture plastics, light cured denture plastics, repair, relining and rebasing
 - Materials
 - Tissue conditioning materials and soft liner.
13. Adhesion: Enamel and Dentine bonding agents and bonding system.
 14. Dental Cements.
 15. Zinc Phosphate Cement.
Zinc Oxide/Eugenol, Modified Zinc Oxide/Eugenol, Ethoxy Benzoyic Acid Cement, Zinc Polycarboxylate , Zinc Polyacrylate Cement, Silico Phosphate Cement.
 16. Glass Ionomer Cement and Hybrid Ionomer Cement
Compomers, Cavity Varnish, Cavity Linners, Calcium Hydroxide and Guttapurcha.
 17. Composite Restorative Materials and properties of composites
 18. Dental amalgam alloys
 - Amalgamation process
 - Properties and uses of dental amalgam
 - General Characteristics of Metals
 - Extraction of metals from their ores and their purification.
 - Micro leakage, creep, galvanism, cold working/strain hardning,
 19. Annealing Welding and soldering. Tarnish and corrosion and their types.
 20. Alloys and its types.
 - Dental casting gold alloys its composition, properties uses.
 - Base metal casting alloys, their composition, properties and comparison with casting gold alloys.
 - Wrought alloys, i.e. steel and stainless steel.
 - Porcelain and bonded porcelain as a dental ceramic, classification of dental porcelain, composition, properties, manufacturing and firing and their uses.
 - Maxillo facial materials used in dentistry.
 - Abrasion and polishing materials

Practical And Laboratory Techniques

- Identification and manipulation of all dental materials.
- Laboratory procedures / experience of Acrylic, partial denture and crown and bridge work.

Books Recommended

- a) Restorative Dental Material by Robert G. Craig and John M. Power.
- b) Skinner's "Science of Dental Materials"
- c) Chemistry of Dental Materials by Mc Cabe
- d) Notes on Dental Materials by M. C. Comb
- e) Science of Dental Materials by William and Cunnigham

E - PAKISTAN STUDIES AND ISLAMIAT

The role of sufis and saints in the spread of Islam in the subcontinent.

Shah Waliullah and Tehrik – I – Mujahidin. The war of Independence 1857. Sir Syed Ahmed Khan and two nation theory. The Aligarh Movement. The Muslim League. The Nehru report and Quaid-I-Azam 14 points. The Ideology of Pakistan. The initial problems faced by newly independent Pakistan. Pakistan and the Muslim World. The Kashmir problem. The U.N.O.

ISLAMIYAT:

The fundamental pillars of Islam. The Holy Qur'an: Sura-e-Furqan. Hadith-e-Nabvi. Uswa-e-Husna. Ashra-e-Mubshra. The Meccan period and life in Medina. Hajja-Tul-Wida. The Rashida Caliphate.

SECOND PROFESSIONAL BDS

A: GENERAL PATHOLOGY

1. CELL INJURY:

- a. Terms necrosis, ischemia, hypoxia, infarction and gangrene.
- b. Sequence of the ultra-structural and biochemical changes which occur in the cell in response to the following:
 - Ischemia
 - Immunological injury-eg. Asthma / SLE /Anaphylactic reaction
 - Physical agents: eg. Radiation
 - Genetic defects- eg. Thalassemia / haemophilia
 - Nutritional deficiency
 - Infectious agents
 - Viruses: eg. Hepatitis / Aids / HIV infections
 - Fungi: eg. Candida Albicans/Candidosis
 - Parasites: eg. Malaria
- c. Irreversible and reversible injury.
- d. Apoptosis and its significance.
- e. Necrosis and its types.
- f. Exogenous and endogenous pigment deposition
- g. Dystrophic and metastatic calcification along with clinical significance.
- h. Metabolic disorders
 - Lipid
 - Protein
 - Carbohydrate

2. INFLAMMATION AND MEDIATORS OF INFLAMMATION

- a. Describe the role of inflammation in the defense mechanisms of the body.
- b. Describe the vascular changes of acute inflammation and relate these to the morphological and tissue effects.
- c. Describe the process of chemotaxis, opsonization and phagocytosis.
- d. Describe the role of cellular components in inflammatory exudate
- e. Differentiate between exudate and transudate.
- f. List the important chemical mediators of inflammation
- g. Describe the pathway of Arachidonic Acid metabolism.
- h. Discuss the role of products of Arachidonic acid metabolism in inflammation.
- i. Describe the mechanism for development of fever, with reference to exogenous and endogenous pyrogens.

- j. Describe chronic inflammation including granulomas.
- k. Describe granuloma , its type and causes.
- l. Describe the systemic effects of acute and chronic inflammation and their possible outcomes.
- m. Describe the signification of ESR.
- n. Give two example of induced hypothermia in medicine.
- o. Describe the pathogenesis, clinical features and lab. Diagnosis of Gout.
- p. Describe the management of acute and chronic Gout.

3. WOUND HEALING

- a. Describe the differences between repair and regeneration.
- b. Describe wound healing by first and second intention.
- c. Discuss the factors that influence the inflammatory reparative response.
- d. Compare wound contraction with cicatrization.
- e. Describe the formation of granulation tissue.
- f. Describe the complications of wound healing.

4. DISORDERS OF CIRCULATION

- a. THROMBO-EMBOLIC DISORDERS AND THEIR MODALITIES:
 - 1. Explain the pathogenesis of thrombosis.
 - 2. Describe the possible consequences of thrombosis.
- b. DISORDERS OF THE CIRCULATION AND SHOCK
 - 1. Define edema, ascites, hydrothorax and anasarca.
 - 2. Describe the pathophysiology of edema with special emphasis on CHF.
 - 3. Describe the pathogenesis of four major types of shock (Hypovolemic, cardiogenic, vasovagal and septic) and list their causes.
 - 4. Describe the compensatory mechanisms involved in shock.

MICROBIOLOGY

- 1. Describe the defense mechanisms of the body.
- 2. Describe the microbial mechanisms of invasion and virulence.
- 3. Differentiate between sterilization and disinfection.
- 4. Describe methods of disinfection and sterilization.
- 5. Describe the principles of aseptic techniques.
- 6. Describe universal precautions for infection control.

7. Describe the general principles of the following serological tests:
 - ELISA – Hepatitis (A,B,C,D,E,G) Rubella, CMV and HIV
 - Haemagglutination – TPHA
 - Western blot – HIV
 - ICT – Malaria
8. Interpret: a) Culture reports, b) Serological reports and c) microscopic reports of gram stain and AFB stain.
9. Describe the principles of proper collection and submission of specimens for laboratory investigations with due precautions.
10. Describe the general characteristics and taxonomy of Bacteria, Viruses and Fungi.
11. Define communicable endemic, epidemic and pandemic diseases, carriers, pathogens, opportunists, commensals and colonizers.
12. List the microorganisms responsible for infection of the body with especial reference to oral cavity.
13. Describe pathogenesis, treatment, epidemiology, prevention and control of the following organisms.
 - Bacteria:
 - Viruses:
 - Fungus:
 - Protozoa:
 - Helminths:
14. Describe principles of anti microbial action

GENETICS

1. Agenesis, Dysgenesis, Aplasia, Hypoplasia, Hyperplasia, Metaplasia, Dysplasia, Neoplasia, Anaplasia, Atrophy and Hypertrophy.
2. Cell cycle and list cell types (stable, labile, permanent)
3. Mechanisms controlling cell growth.
4. Classification systems of tumors.
5. Characteristics of benign and malignant tumors.
6. Grading and staging system of tumors.
7. Biology of tumor growth.
8. Process of carcinogenesis.
9. Host defense against tumors.
10. Mechanism of local and distant spread.
11. Local and systemic effects of tumors.

12. Tumor markers used in the diagnosis and management of cancers.
13. Chemical, Physical agents and Viruses related to human cancer.
14. Epidemiology of common cancers in Pakistan.

IMMUNOLOGY

1. Antigen, antibody, epitope, hapten and adhesion molecules.
2. Innate and acquired immunity.
3. Type I, type II, type III, and type IV hypersensitivity reactions.
4. Classification of the immunodeficiency disorders.
5. Autoimmunity.

THE ORAL CAVITY:

1. Leukoplakia.
2. Predisposing factors (pipe smoking, ill fitting denture, alcohol abuse, irritant foods) of leukoplakia.
3. Risk factors of oral cancer.
4. Clinical and morphological features of oral cancer.
5. Benign and malignant tumours of salivary glands.
6. Clinical and morphological features of pleomorphic adenoma.

B: GENERAL PHARMACOLOGY

General Pharmacology:

1. Definition of drug and drug nomenclature.
2. Branches / Divisions of Pharmacology
7. Sources of drugs
8. Active principles of drug and Pharmacology
9. Dosage forms and doses of drugs.
10. Drug administration.
11. Absorption of drugs and processes involved in drug absorption
12. Factors modifying absorption of drugs.
13. Transport of drugs across cell-membrane
14. Bioavailability, its clinical significance and factors affecting bio availability
15. Drugs reservoirs, distribution and redistribution of drugs, plasma protein binding

16. Pro-drug, Biotransformation of drugs, enzyme induction, enzyme inhibition and entero-hepatic circulation
17. Plasma half-life of drugs, steady state concentration, its clinical importance and factors affecting it.
18. Excretion of drugs.
19. Mechanism of drug action.
20. Dose response curves, structure-activity relationship.
21. Factors modifying action and doses of drugs.
22. Pharmacokinetics, pharmacodynamics and Receptors

Locally Acting Drugs

1. Demulcents, Emollients, Irritants, Counter irritants, Astringents, antiseborrheics, locally acting enzymes.
2. Antiseptics and Disinfectants
3. Ectoparasiticides

Drugs Acting on Gastrointestinal Tract

1. Anti Emetics

Cardiovascular Drugs

1. Antiarrhythmic Drugs
2. Inotropic Drugs
3. Antianginal Drugs
4. Thrombolytics
5. Antihyperlipidemic Drugs

Diuretics

Autocoids

Drugs Acting on Autonomic Nervous system

Cholinergic Drugs

1. Choline Esters
2. Anticholine-esterases
3. Cholinomimetic Alkaloids
4. Anti- Cholinergic Drugs
5. Anti Muscarinic
6. Non catecholamine

Sympatholytic / Antiadrenergic

1. Alpha Adrenergic Blockers
2. Beta Adrenergic receptor Blockers

Adrenergic Neuron Blockers

Autonomic Ganglionic Blockers

Skeletal Muscle Relaxants

- a. Neuromuscular Blocking Agents – D-tubocurarine, Suxamethanin
- b. Central Muscle Relaxants, Meprobromate, Mephenesim , Diazepam etc.

Central Nervous System

- a) Sedative-Hypnotics
- b) Antiepileptics
- c) General Anaesthetics
- d) Local Anesthetics
- e) Drugs for movement Disorder/Muscle Relaxant
- f) Alcohol
- g) Drugs for Migraine
- h) Stimulants of the Central Nervous System:
 - Caffeine, Theophyline, Theobromine
 - Brain stem stimulants: Picrotoxin, Nikethamide, Ethamivan, Doxapram
- i) Psychopharmacology
 - Anti-psychotics
 - Anxiolytics
 - Anti-Depressant / Anti mania

Drugs acting on Endocrine System

- a) Drugs-Hypothalamic Drugs
- b) Adrenocorticoids
- c) Sex Hormones
- d) Thyroid / Parathyroid Drugs
- e) Pancreatic Hormones and Oral hypoglycemic Agents

ANTIBIOTICS:

Parameters:

Provisional Diagnosis, Investigation, Empirical Therapy, prescribing
After culture and sensitivity.

VITAMINS:

Parameters:

1. Groups of vitamins prescribed
2. Vitamins prescribed on basis of therapeutic indication or empirical
3. Single / multiple vitamins prescribing
4. Rational with use of vitamins.

ANALGESICS:

Parameters:

1. Various groups of analgesics prescribed
2. Single / multiple adverse drug prescription.
3. Non specific indications of analgesic prescribed

ADVERSE DRUG REACTIONS

Anti-microbials, cytotoxic drugs, steroids etc.

C: ORAL BIOLOGY & TOOTH MORPHOLOGY**EMBRYOLOGY**

1. General human development
2. The brachial apparatus
3. Development of face/tongue/thyroid gland
4. Development of nasomaxillary complex
5. Development of palate
6. Development of mandible and temporo mandibular joint
7. Development of para-nasal sinuses
8. Development of salivary glands
9. Tooth development and its associated structures
10. Development of cartilages and bones of facial skeleton
11. Introduction of clinical anomalies related with all the above topics
12. Introduction to Post natal facial growth.
13. Development of base of skull

Developmental Histology (structure) and Function of: -

1. Bone/cartilage (specially jaws)
2. Alveolar bone
3. Periodontal ligament
4. Cementum
5. Tooth eruption and shedding
6. Oral mucous membrane
7. Dentine
8. Pulp
9. Enamel
10. Temporo-mandibular joint clinical consideration
11. Endogenous implants/changes during tooth movement/wound healing

ORAL PHYSIOLOGY:

1. Immunology
2. Calcium metabolism and bone
3. The healing of bone fractures
4. Repair and regeneration of dental tissues
5. Histology and function of
 - a) Saliva and salivary glands
 - b) Taste and taste organs
 - c) Pain and pain pathway

TOOTH MORPHOLOGY AND OCCLUSION

1. Introduction and nomenclature
2. Anatomic and physiologic consideration of form and function of orodento- facial structures
3. Brief study of comparative Oral Biology and Tooth Morphology
The Deciduous Dentition:
4. Detail description of each primary tooth
5. The pulp cavities
6. The difference between deciduous and permanent teeth

OCCLUSION:

1. Temporo-mandibular joint
2. Muscles of mastication and facial expression
3. Mastication and Swallowing
4. Occlusion at primary/mixed/adult dentition stages
5. Innervation and arterial supply of orofacial structures

PRACTICALS:

Preparation of slides with different staining techniques

HISTOLOGY:

Practical use of microscope, microtome and preparation of ground section of teeth

Books Recommended:

- Orban's Oral Histology and Embryology, S.N.Bhaskar
- Oral Histology (Development, Structure and Function), A.R.Tencate
- Oral Development and Histology, James K. Avery
- Introduction to Oral Biology and Tooth Morphology, Scott & Symons
- Wheeler's Oral Biology and Tooth Morphology and Morphology, MajorM. Ash
- Concise Oral Biology and Tooth Morphology and Morphology, James L. Fuller
- Oral Embryology, Sperber
- Oral Physiology, Cristopher Lavelle
- Physiology of Mouth, Jenkins
- An Atlas of Oral Anatomy, Berkowitz, G.R.Holland

D –COMMUNITY AND PREVENTIVE DENTISTRY**Introduction to Community Dentistry and Dental Public Health:**

Concepts of health; disease and illness and factors affecting these states; activities carried out in the field of community dentistry.

Oral epidemiology:

Definition, uses and principles of epidemiology; Research designs; dental surveys; clinical trials; screening; oral health assessment indices; current concepts about etiology, natural history and epidemiology of oral diseases and conditions having public health implications; assessment of disease risk and predictive tests.

Prevention of oral and dental diseases:

Levels of prevention; health promotion; specific protection; dental plaque and its role in the etiology of dental diseases; diet; nutrition and dental health; water fluoridation; fluoride supplements; professionally and self-applied topical fluorides; fissure sealing; methods of plaque control; principles and strategies of dental health education and promotion; infection control; protection from radiation and mercury hazards in dental practice.

Dental health care delivery system:

The structure and financing of dental care, role of dentists, dental auxiliaries and general health workers in oral health care,

dental care of people with special needs including the elderly, the handicapped, HIV / AIDS patients, school children, principles and elements of primary health care, ethical issues in dental care.

Behavioral sciences:

Health behavior and its determinates, attitudes, beliefs and values about health and illness, theories of health behavior, dentist – patient communication, management of stress, fear and anxiety in dentistry, child psychology and behavior management and modification techniques, counseling, motivation and compliance.

Introduction to bio – statistics:

Types of variables, frequency distribution, measures of central tendency and variability in data, methods of sampling, sampling error, probability, normal distribution, confidence interval, tests of statistical significance, Kappa test.

1. Community Dentistry practical & field assignments:**A. Clinical Oral Examination**

- i Exercise on Models and Extracted teeth
- ii Exercise on patients in out patients department
- iii Examination of institutionalized population like school children

B. Questionnaire / interview study

- i Designing a questionnaire
- ii. Pilot testing the questionnaire
- iii Data coding, processing and analysis

C. Planning and conducting a dental health education (D.H.E.) session:

- i. Designing D.H.E. material
- ii Planning, conducting and evaluating (D.H.E) sessions

2. Chairside preventive dental procedures

- i High fluoride gel application
- ii Fissure sealing
- iii Dietary counseling
- iv Plaque disclosing
- v Instructions about Oral Hygiene measures
 - Tooth Brushing demonstration
 - Inter-dental cleaning
 - Chemical control of dental plaque

PRE CLINICAL DENTISTRY

It is not an examination subject will be examined in the subject of operative dentistry and Prosthodontics in final year.

The preclinical dentistry include the following: -

- A. Junior Operative Techniques/Dental Materia Medica
- B. Junior Prosthodontic Techniques

A-1 Junior Operative Techniques

- Introduction to dental operative Techniques
- Introduction to instrument used in cavity preparation
- Classification of dental caries
- Principles of Cavity preparation
- Cavity preparation on plaster models/phantom head
- Filling Materials
- Dental Materia Medica

B-1 Junior Prosthodontics Techniques:

- i Introduction of impression and denture materials
- ii Laboratory procedures
 - a) Complete Dentures
 - b) Acrylic removable partial denture
 - c) Cast partial denture
 - d) Anterior crowns
 - e) Posterior crowns
 - f) Bridges
 - g) Relining / Rebasing procedures
 - h) Repairs
 - i) Soldering and welding techniques.

THIRD PROFESSIONAL B.D.S

A: GENERAL MEDICINE

Core Knowledge and Principles of Medicine.

To deal with critical Situations:

Clinical Teaching.

1. History taking in general,
2. GPE, Pallor, Cyanosis, Jaundice, Clubbing and Koilonychia.
3. Thyroid, Lymph nodes, Dehydration, Nutrition, Decubitus, Edema.
4. Pulse.
5. Examination of Blood Pressure and JVP.
6. History taking in GIT – Vomiting, Diarrhea, Pain Abdomen, Constipation.
7. Hematemesis, Melena, Dyspepsia, Distension.
8. Examination of GIT – Inspection, Palpation.
9. Percussion, Auscultation.
10. Any deficient program.
11. Chest pain, wheezing.
12. Inspection, Palpation, Percussion, Auscultation front of chest.
13. Inspection, Palpation, Percussion, Auscultation back of chest.
14. Any deficient program.
15. History taking in CVS.
16. GPE in CVS-Clubbing, Koilonychia, Osler's nodes, Hemorrhages, Cyanosis.
17. Pulse, JVP, Blood pressure.
18. Inspection, Palpation of pericardium.
19. Percussion, Auscultation of pericardium – Mitral, Tricuspid, Aortic.
20. Pulmonary areas.
21. Any deficient program.
22. History taking in CNS.
23. Higher Mental Functions – level of consciousness, Behavior, Speech, Memory.
24. Examination of cranial nerves – I, II, III, IV nerves.
25. V, VI, VII, VIII nerves.
26. IX, X, XI, XII nerves.
27. Examination of Motor system.
28. Examination of sensory system – Crude touch, pain, Temperature.
29. Fine touch, Pressure, Vibration, Joint position,
30. Cortical sensations.
31. Two point localization, Two point discrimination.
32. Reflexes.
33. Examination of Cerebellar system.

Knowledge of Systems and the Diseases:

1. Genetic factors in disease.
2. Immunological factors in disease.
3. Climate and environmental factors in disease.
4. Diseases due to infection.
5. Diseases of the cardiovascular system.
6. Diseases of the respiratory system.
7. Diseases of the alimentary tract and pancreas.
8. Diseases of the liver and biliary system.
9. Nutritional factors in disease.
10. Disturbances in water, electrolyte and acid base balances.
11. Diseases of the kidney and genito-urinary system.
12. Endocrine and metabolic Diseases.
13. Diseases of the blood.
14. Oncology.
15. Diseases of connective tissues joint and bones.
16. Diseases of the skin.
17. Psychiatry.
18. Diseases of the nervous system.
19. Principles of geriatric medicine.
20. Acute poisoning.

B: GENERAL SURGERY

Core Knowledge and Principles of Surgery:

1. Physiological response to Surgical Trauma and homeostasis.
2. Wound and its Repair.
3. Pathophysiology and Management of Shock including fluid and electrolyte imbalance.
4. Investigation and treatment of Infections and Parasitic Infestations of surgical Importance.
5. Hemorrhage Blood Transfusion and their implications.
6. Management of Acutely injured & critically ill patients including Aspiration pneumonia and embolic phenomenon.
7. Principles in the Management of common Skin and Soft Tissue problems: Ulcers, Abscesses, Sinus & Fistulae, Swellings, Embedded foreign bodies and Minor injuries.
8. Principles of Anesthesia.
9. Nutrition of surgical patients.

To deal with critical Situations:

1. Cardiac Arrest.
2. Polytrauma with airway difficulty and circulatory instability.
3. Uncontrolled External Hemorrhage.
4. Sudden upper Respiratory Tract Obstruction.
5. Patient in Hypovolumic or Septicemic Shock.
6. Tension Pneumothorax.
7. Cardiac Tamponade.
8. Unconscious patient due to Head Injury.
9. Patient with Gas Gangrene and Tetanus.
10. Burns

Knowledge of Systems and the Diseases:

Head, Face and Neck:

1. Development abnormalities of face, palate, lip.
2. Principles of management of Head Injuries and its complications.
3. Oral region including tongue.
4. Diseases of Salivary glands (Inflammation, Calculus, Tumors)
5. Neck lumps including Lymphatics Thyroid, Parathyroid.

Chest Wall & Thorax:

1. Blunt & Penetrating Injuries and their Complications.
2. Lung abscess and Empyema Thoracis.
3. Growth of cysts in the lungs.

Gastro Intestinal Tract:

1. Diseases causing esophageal Obstruction.
2. Peptic Ulcer disease & its complications.
3. Tumors of Stomach.
4. Conditions Causing Acute Abdomen.
5. Conditions causing Chronic Abdomen including malignant lesions of small and large bowel.

Abdominal, Pelvic and Genital Traumas and Hernias.

1. Principles in management of abdominal trauma
2. Epigastric Hernia
3. Incisional Hernia

Liver:

1. Trauma
2. Obstructive Jaundice
3. Liver Abscess
4. Hydated cyst
5. Malignancy (Hepatoma & Secondaries)

Gall Bladder:

1. Acute and chronic Cholecystitis
2. Cholelithiasis and its Complications
3. Malignancies

Pancreas:

1. Acute, Relapsing and Chronic pancreatitis
2. Pancreatic masses including (benign, malignant) neoplasia

Skin & Soft Tissues:

1. Common benign and malignant skin lesions
2. Wounds / Ulcers / abscesses / Sinuses / Fistulae
3. Soft Tissue Lumps

Orthopedics and Trauma:

1. Common Congenital Malformations of Locomotive System.
2. Bone Fracture & their Complications.
3. Sports injuries and afflictions of Tendons and Bursae.
4. Bone and joint Infections.
5. Arthritis.
6. Bone and Cartilage Tumours.

Vascular and Nerve Disorders:

1. Vascular afflictions.
2. Varicosities.
3. Deep venous thrombosis.
4. Peripheral nerve Injuries.

Essential Skill to be acquired:

1. Provide First Aid: Resuscitation (ABC) of Polytrauma, CPR.
2. Collect samples of blood, urine, sputum, pus swab etc.
3. Understand the principles of pre-operative preparations, Sterilization /Disinfecting techniques.
4. Understand principles of wound care, Skin Suturing and Suture Removal, Incision and Drainage of Superficial Abscesses, Excision of Small Soft Tissue Lumps, Needle Biopsies, Aspiration of localized fluids, etc.
5. Have Observed common surgical procedures, treatment of Fracture Dislocation and Methods of General / Local Anesthesia.
6. Have observed instillation of Chemotherapy and principles of Radiotherapy.

C. ORAL PATHOLOGY

1. Developmental disturbances of Teeth
2. Pre malignant , Benign and Malignant lesions
3. Salivary gland tumors and diseases
4. Odontogenic & non –Odontogenic tumours
5. Tooth wear
6. Caries
7. Diseases of pulp and periapical tissues
8. Spread of Infections
9. Wound Healing
10. Diseases of bones and joints
11. Cysts of Jaws and Oral Cavity
12. Immunology

Practical in Oral Pathology to include:

1. Study of Histopathological slides
2. Study of Radiographs
3. Histochemical Techniques


Books Recommended:

1. Oral Pathology, J.V.Soans, J.C.Southam
2. Clinical Guide of Oral Medicine, P.J.Lamy & MAO Lenix
3. Essential of Oral Pathology and Oral Medicine, R.A.Cawson, E.W.Odell

D: PERIODONTOLOGY

Introduction to Periodontology

1. Knowledge of healthy periodontium macro and micro anatomy and physiology of periodontium

- | | | |
|--|---|--|
| <ul style="list-style-type: none"> 1. Gingiva 2. Periodontal Ligament 3. Root cementum 4. Alveolar bone 5. Dentogingival Junction |  | <ul style="list-style-type: none"> Blood supply Nerve supply Lymphatic System |
|--|---|--|

2. Epidemiology of Periodontal diseases.

- a) Plaque index
- b) Debris index
- c) PMA index
- d) Gingival index
- e) Sulcus bleeding index
- f) Periodontal index
- g) Periodontal destructive index
- h) Community Periodontal index of treatment need (CPITN)

3. Etiology of periodontal diseases

- | | | |
|--|---|--|
| <ul style="list-style-type: none"> A) Dental plaque a) Definition b) Composition c) Maturation d) Structure e) Plaque microbiology |  | <p>Classification</p> <ul style="list-style-type: none"> a) Supragingival b) Subgingival |
|--|---|--|

- B) Dental Calculus
- Definition
- a) Origin and composition
- b) Mode of attachment
- c) Mineralization
- d) Clinical significance of calculus

4. Microbiology of Plaque associated Periodontal diseases.

5. Histopathogenesis of Plaque associated Periodontal diseases.

6. Host response in Periodontal Disease

Hypersensitivity reaction cell mediated and Humoral immunity.

7. Classification of Periodontal Diseases Clinical significance of Dental Plaque in the formation of gingivitis

A) Acute Gingivitis

Signs and symptoms of acute gingivitis and different types of gingivitis.

- a) Traumatic gingivitis
- b) Acute Necrotizing gingiviti
- c) Acute Herpetic - gingivo stomatitis
- d) Circum coronitis
- e) Streptococcal gingivitis (With their etiological factors and treatment)

B) Chronic Gingivitis

Specific and Non-specific gingivitis

Specific Gingivitis

- a) T.B.
- b) Syphilitic gingivitis
- c) Plasma cell
- d) Allergic

Emphasis should be given towards.

- a) Gingival Bleeding
- b) Gingival texture
- c) Gingival consistency
- d) Gingival swelling (Hyperplasia)
- e) Gingival Recession
- f) Gingival Pigmentation

8. Desquamative Gingivitis.

- a) Definition, clinical features in the form of
- b) Mild, moderate and severe form of Desquamative Gingivitis.
 - i. Nutritional factors
 - ii. Hormonal factors
 - iii. Dermatological condition
 - iv. Chemotherapeutic agents
 - v. Fungal infection

9. Periodontal Pocket.

- A)
 - a) Definition
 - b) Soft tissue wall of Periodontal pocket
 - c) Hard tissue wall of Periodontal pocket
 - d) Pocket content.
- B) Classification of periodontal pocket
 - a) Suprabony pocket
 - b) Infrabony pocket
- C) Bone loss and pattern of bone loss in periodontal disease.

10. Periodontitis

- A) Adult onset periodontitis (Slowly Progressional Periodontitis)
- B) Rapidly Progressive Periodontitis
 - a) Early onset Periodontitis
 - i. Prepubertal Periodontitis
 - ii. Juvenile Periodontitis
 - b) Adult onset rapidly Progressional Periodontitis.
- C) Necrotizing Periodontitis
 - i. AIDs Related
 - ii. Non AIDs Related
- D) Refractory Periodontitis
- E) Trauma from Occlusion
 - Definition
 - i. Acute & Chronic trauma
 - ii. Primary & Secondary trauma
 - iii. Consequences of trauma
 - iv. Tissue Response of trauma
- F) Periodontal manifestation of Systemic diseases.
(Different systemic diseases are discussed with respect to periodontal manifestation)

11. Tumour and Tumour like lesions of the Periodontium.

12. Periodontal Abscess and treatment

Acute Chronic

13. Periodontium and AIDs

14. Furcation involvement in Periodontal disease

Classification

Management

15. Periodontal Consideration with:

- 1. Orthodontics
- 2. Endodontics
- 3. Removable Prosthodontics
- 4. Fixed Prosthodontics
- 5. Implants

16. GTR (Guided Tissue Regeneration)

Introduction, knowledge and the techniques.

17. Diagnosis of Cause Related Disease.

- a) History taking
- b) Examination of the Oral Cavity

- c) Importance should be given to the periodontitis.
 - d) Differential Diagnosis
 - e) Plaque Recognition
 - i. Visualization with naked eyes.
 - ii. Visualization with disclosing agents.
 - f) Treatment Planning
 - i. Mechanical control of Dental Plaque
 - Motivation, education and instruction.
 - Interdental cleaning (AIDs)
 - Scaling and root planing with advantages and disadvantages.
 - g) Chemical control of dental Plaque
 - i. Chemotherapeutic agents for topical and systemic administration.
18. Re-evaluation of the cause related therapy, surgical control of dental Plaque.
- A) Aims and objectives of periodontal therapy.
 - i. Local Anaesthesia in Periodontal Surgery
 - ii. Instruments for periodontal surgery procedures
 - iii. Periodontal probing impact and radiographic interpretation.
 - iv. Sterilization, universal precautionary measures
 - B) Indications and contra indications of periodontal surgery.
 - Surgical Procedures
 - i. Curattage
 - ii. Gingivectomy with different modalities
 - iii. Flap Surgery with different modalities
 - iv. Muco gingival Problem
 - Soft tissue graft
 - Pedical graft or displaced flap
 - Free gingival graft
 - Crown lengthening procedure
 - Vestibular widening procedure
 - Frenectomy
19. Periodontal dressing
20. Periodontal Suturing
21. Periodontal treatment of medically compromised patients
22. Occlusal Analysis
 - i. Diagnosis of Occlusal trauma
 - ii. Occlusal Adjustment
 - iii. Splinting

Clinical & Practical Work:

1. Knowledge of the objectives of Periodontal therapy.
 1. Elimination of local etiological factor
 2. Elimination of periodontal pocket
 3. Establishment of normal Physiolocal architecture of periodontium
 4. To be able to interpret
 - Findings of medical and dental history and relate this to periodontal diagnosis and treatment
2. To be able to secure a good dental history pertaining to:
 1. Past Periodontal treatment.
 2. Present oral hygiene habits
 3. Past present oral habits
 4. Presence of Hypersensitive teeth
 5. Past extraction (Reason)
 6. Past Restorative treatment, filling types, fixed/removal restoration.
 7. Past orthodontic treatment
 8. Family Dental history
3. Detailed clinical examination and charting of the Periodontium i.e. accurate probing.
 - To be able to recognize problems of an inadequate width and attached gingival .
4. Shallow vestibule
 - High muscle frenum attachment
 - a) Scaling manual
 - b) Root Planning
 - c) Polishing
 - d) Curettage
 - e) Gingivectomy
 - f) Epulis Removal (with incisional and excisional procedure)
 - g) Flap Surgery.

Books Recommended

1. Clinical periodontology by Glickman
2. Clinical Periodontology by Manson
3. Colour Atlas of Clinical and Surgical Periodontology by Strahan & Waite
4. A Text book of Clinical Periodontology by Jan Lindhe
5. Fundamentals of Periodontic by Thomas G. Wilson, Kenneths Kornman.
6. Periodontology and Periodontics, Modern Theory and Practice by Sigurd P. Ramford Major M. Ash.

E: ORAL MEDICINE

INTRODUCTION: SIGNIFICANCE OF ORAL MEDICINE:

1. Oral diagnosis:

Histology, general health status, oral examination (including lips, oral mucosa, floor of the mouth, teeth, gingival, occlusion, salivary glands, jaw bones), examination of temporomandibular joint. Roentgenological examinations, laboratory aids, analysis Treatment Planning and Patient Management.

2. Immunity and its impact on oral health.

3. Oral Infections:

1. Bacterial infections.
2. Fungal infections.
3. Viral infections.

4. Oral soft tissue lesions;

Classification;

1. White lesions
2. Pigmented lesions
3. Ulcerative lesions
4. Vesiculo-bullous lesions.
 - a. Pre-malignant lesions, Clinical features, Diagnosis and management.
 - b. Disorders of the tongue and lips. Clinical features, diagnosis and treatment.
 - c. Diseases of salivary glands, xerostomia; Clinical features, Diagnosis and management.
 - d. Diseases of Jaw bones, Clinical features, Diagnosis and Management.
 - e. Disorders of Tempo-mandibuar joint: Clinical features, Diagnosis and treatment.
 - f. Disorders of Teeth, Clinical features. Diagnosis and Treatment.
 - g. Focal infection: Significance diagnosis and management of effect cases.
 - h. Clinical features, Diagnosis and treatment of pain;
 - a. Dento-alveolar pain
 - b. Neurological pains.
 - c. Psycho-somatic pain.

5. Halitosis: Causes, Clinical features, diagnosis and therapy.

6. Allergy and drug reactions in dental practice: Clinical features, Diagnosis and treatment of anaphylactic shock.

7. Special consideration to the dental problems of children and senior citizens.

8. Nutrition and Oral Health.

9. Professional hazards in dentistry.

10. Oral Manifestations of Systemic Diseases:

- Auto immune diseases related to oral cavity.

11. Oral aspects of systemic diseases and their dental management.

- Particularly of cardiovascular diseases.
- Disorders of Respiratory System.
- Disorders of Gastrointestinal Tract.
- Sexually transmitted diseases:
 - AIDS, oral manifestations, diagnosis and management.
 - Syphilis, oral manifestations, diagnosis and management.
 - Oral aspects of Gonococcal Infections, diagnosis and management.
- Diseases of Liver with special attention to the infectivity of the patients and mode of its further spreads and control specific reference to universal precautions.
- Diseases of Kidneys, special attention to patient on dialysis.
- Hormonal disturbances.
 - Oral aspects of puberty, menstruation, pregnancy and menopause.

12. Oral aspects of skin diseases.**13. Special considerations for patients suffering from systemic disorders, like blood disorders requiring blood examination prior to oral surgery.**

- Anaemia
- Leukeamia
- Bleeding disorders.
- Patients on anti-coagulant therapy, management.

14. Oral Malignancies, Diagnosis and management.

- Patients on Radio therapy
- Patients on Chemo-therapy

15. Methods of report writing**BOOKS RECOMMENDED**

1. Oral Medicine by W.R. Tyldesley
2. Burket's oral Medicine by Malcolm A. Lynch.
3. Oral Medicine and Pathology by Cawson and Odel

F: PROSTHODONTICS

Partial Dentures

- a. Definitions
- b. Applied Anatomy and Physiology
- c. Oral manifestations of local and systemic disorders
- d. History General and oral examination
- e. Evaluation
- f. Diagnosis and treatment planning, prognosis
- g. Bio-mechanics of oral cavity and contributory factors
- h. Classification
- i. Study cast, master cast, working cast.
- j. Components: Outline of support, retention, bracing and reciprocation, connectors.
- k. Surveying, Design of partial dentures
- l. Mouth rehabilitation/Odontoplasty
- m. Impression techniques and modifications
- n. Construction of wax pattern and casting procedures
- o. Trial of metal frame work
- p. Maxillo mandibular relations: Use of face bow, articulation techniques including split cast techniques Selection of
- q. artificial teeth
- r. Arrangements of teeth
- s. Processing and finishing procedures
- t. Insertion and post insertion counseling and follow up

BOOKS RECOMMENDED

Removable Partial Dentures.

- a. MacCraken's Removable partial dentures
- b. Boucher's treatment of partially edentulous patients by Gavin P Renner.
- c. Miller's Removable partial dentures,
- d. Designing Removable partial dentures by John Osborn.
- e. Atlas of Removable partial dentures by Davenport.

G. ORAL AND MAXILLOFACIAL SURGERY

1. BASIC PRINCIPLES OF SURGERY

- i. Introduction, History and Diagnosis and treatment planning
- ii. Sterilization, instruments and armamentarium
- iii. Incisions, Flap design and tissue handling
- iv. Haemostasis, debridement and suturing.

- v. Post Operative care and nutrition, Prevention of infection, Antibiotics and cross-infection

2. LOCAL ANAESTHESIA

- i) Introduction, types and Pharmacology.
- ii) Indications and contra-indications,
- iii) Surgical Anatomy
- iv) Administration techniques
- v) Complications and management

3. EXODONTIA

- i) Introduction
- ii) Indications and contra-indications
- iii) Principles and application of forceps extraction
- iv) Principles and application of elevators
- v) Surgical removal of erupted/broken down roots teeth
- vi) Complication of Extraction
- vii) Management of complications

4. Prevention And Management of Medical Emergencies

5. Introduction to Dental Ethics and Law, Forensic Dentistry

6. General Anaesthesia and Sedation in Dentistry

7. Impacted Wisdom tooth Surgery

- a) Introduction and etiology
- b) Indications and contra-indications
- c) Surgical Techniques
- d) Complications of impacted wisdom tooth Surgery and its management

H: OPERATIVE DENTISTRY

Dental Caries

- Etiology
- Pathogenesis
- Prevention

Examination, Diagnosis, and Treatment Planning

- Examination and Diagnosis
- Caries
- Erosion, Attrition, Abrasion, cracked tooth, others
- Treatment sequencing, placement and repair/replacement
- Selection of restorative materials
- Restorative failure
- Postoperative problems

Principles of cavity design & preparation

- Basic principles, instrumentation and nomenclature
- Introduction to lasers
- Preparations
- Dental amalgam
- Tooth colored restorative materials

Sterilization and cross infection control

- Isolation, Operator and the environment
- Instruments and equipment
- Control of the operating field
- Soft tissue management
- Esthetic considerations

FINAL PROFESSIONAL BDS**A: PROSTHODONTICS****Complete Dentures.**

- a) Definitions.
- b) Applied Anatomy and Physiology
- c) Peripheral tissue attachment of denture bearing area.
- d) Tongue form
- e) Saliva
- f) Systemic disorders and applied pathology.
- g) Evaluation of patients.
- h) Identification of patients
- i) General conditions.
- j) Muscle tone and muscular development.
- k) Osmotic balances
- l) Oral lesions with skin manifestations
- m) Psychiatric evaluation of patients
- n) Oral condition of denture bearing area
- o) Ridge form and relations.
- p) Oral mucosa: resistant and non resistant tissues
- q) Alveolar bone resorption.
- r) Face forms
- s) Fundamentals of Denture retention and contributing factors
- t) Mouth preparation including preprosthetics Surgery

Impression Procedures

- a) Objectives of impression.
- a) Theories and techniques
- b) Impression techniques: minimum, definite, selective pressure impression.
- c) Pascal's law and its corollaries, atmospheric pressure, intermolecular attraction, interfacial, surface tension
- d) Impression Techniques: primary, wash and secondary impressions, impression trays, impression materials.
- e) Factors responsible for physical retention, physiological, mechanical, surgical and psychological factors.
- f) Stability
- g) Maxillo-mandibular relations.
- h) Occlusal and Rest vertical relations.
- i) Horizontal relations.
- j) Centric and Eccentric relations.
- k) Articulators.
- l) Theories of articulation.
- m) Protrusive records condylar path.
- n) Lateral records.
- o) Hanau's formula.
- p) Facebow, arbitrary and kinematics.
- q) Hinge axis.
- r) Semi adjustable and acron type articulators.
- s) Selection of teeth, arrangement of teeth Factors responsible for size, shape, colour, shade, position and relationship of teeth.
 - Curve of Spee.
 - Curve of Wilson.
 - Monson curve.
- t) Occlusion and articulation,
- u) Phonetics
- v) Trial
- w) Insertion
- x) Post-insertion follow up.

Immediate Dentures and Replacement Dentures

- a) Classification and types (partial, complete).
- b) Indications and contra indications
- c) Objectives
- d) Clinical and laboratory procedures
- e) Multi disciplinary approach including care during surgery
- f) Insertion, follow up and maintenance.

Implantology

- a) Types of implants
- a) Endosseous
- b) Sub periosteal
- c) Endodontic implants.
- b) Osseo integration and Bio compatibility.
- c) Limitation of implants.
- d) Prosthodontic Options.
- e) Clinical and laboratory procedures

Maxillo Facial Prosthodontics.

- f) Classification of congenital and acquired defects.
- g) Principles governing management of patients presenting with various defects
- h) Obturators
- i) Cleft palate prosthesis
- j) Speech aid prostheses
- k) Facial prostheses
- l) TMD splints
- m) Bite Raising appliances
- n) Occlusal splints
- o) Arthralgia and Myalgia splints
- p) Splints and Stents.

Occlusion including TMD/MPD

- a) Theories and Principles of Occlusion.
- b) Occlusal Trauma
- c) Concept, etiology, Treatment planning and options

Gerodontology

- a) Principles and procedures relating to the management of medically compromised patients and the elderly
- b) Effects of medication
- c) Medical conditions having oral manifestation
- d) Xerostomia
- e) Root caries
- f) Geriatric Nutrition
- g) Principles of prosthodontic procedures in geriatric patients

1. Fixed Prosthodontics**A) Principles of Fixed prosthodontics**

- a) Definitions:
- b) Applied Anatomy and Physiology

- c) Oral manifestations of local and systemic disorders
- d) History: General and oral examination
- e) Evaluation
- f) Diagnosis and treatment planning, prognosis
- g) Bio-mechanics of oral cavity and contributory factors

B) Bridges

- a) Indications and contraindications
- b) Classification and types
- c) Components of a bridge
- d) Design of various component parts
- e) Abutment and retainer selection
- f) Margin placement and pontic designs.
- g) Steps of Procedures
 - i. Tooth preparation
 - ii. Impression procedures
 - iii. Lab procedures
 - iv. Localization and trial of bridge frame work
 - v. Final cementation
 - vi. Post insertion follow up, complication and management
- h) Material considerations and cementation
- i) Resin – Bonded Bridge

2. Over Dentures

- a) Definitions
- b) Applied Anatomy and Physiology
- c) Oral manifestations of local and systemic disorders
- d) History General and oral examination
- e) Evaluation
- f) Diagnosis and treatment planning, prognosis
- g) Bio-mechanics of oral cavity and contributory factors
- h) Classifications and types
 - i. Partial and complete
 - ii. Removable and Fixed
 - iii. Transitional or Diagnostics and permanent definitive.
 - iv. Tooth supported, root supported, implant supported
- i) Indications contra indications, advantages and disadvantages
- j) Steps of procedures and follow up.

3. Precision Retained Dentures

Intra Coronal, Extra Coronal and Intra radicular attachments.

4. Relining, Rebasing and Repairs

- i) General indications and principles
- ii) Procedures.

Geriodontology

1. Management strategies for the dental care of the elderly.
2. Dental and oral diseases and disorder in the elderly.
3. Range of psychological and social factors involved with geriatric patients.
4. Distinguish between normal and abnormal consequences of aging.
5. Excessive tooth wear.
6. Root dental caries.
7. Recession of the gingival tissues and the special difficulties of providing removable prostheses.

BOOKS RECOMMENDED

A) Fixed Prosthodontics

- a. Planning and making crowns and bridges by B. G. Smith.
- b. Contemporary fixed prosthodontics by Rossential and Fujimoto.
- c. Fundamentals of crown and bridge by Shillenberg.
- d. Tillman's Principles of crown and bridge.
- e. Atlas of Tooth preparation for crown and bridge by Shillenberg.

B) Complete Denture Prosthodontics

- a. Boucher,s Prosthodontic treatment for edentulous Patients by Dicky and Zarb,
- b. Atlas of complete dentures by John Hobkirk
- c. Syllabus of complete dentures by Heartwell and Rahn.
- d. Immediate and Replacement dentures by Anderson an Storer.
- e. Fenn's Clinical dental Prosthodontics by MacCraken.
- f. Complete Dentures Prosthodontics by Basker and Devenpot.

C) Miscellaneous

- a. Atlas of implantology by Norman Kranin.
- b. Dental laboratory techniques by Morrow, Rudd and Eissman.
- c. Occlusion by Ramfjord and Ash.
- d. Management of Temporomandibular Disorders by Okeson.

B: OPERATIVE DENTISTRY**1. Radiology & Radiography**

1. Periapical
2. Bitewing
3. Occlusal
4. OPG

2. Restorative materials

1. Amalgam
 - a. Applied Chemistry
 - b. Mercury hazards & hygiene
2. Composite resins
 - a. Applied Chemistry, Acid etching,
 - b. Enamel & Dentine bonding, Restoration of Class III & IV Posterior Composite Composite Veneers
3. Cements
 - a. Ca(OH)₂
 - b. Glass Ionomers Zinc Phosphates
 - c. Zinc Oxide Eugenol and others

3. Discoloration of teeth**4. Inlays and Onlays****5. Restoration of Pulpless teeth (Post and Core)****6. Pin Retained restorations****7. Bleaching**

1. Internal
2. Extrenal

8. Veneer

1. Porcelain.
2. Composite
3. Metal

9. Restorative / Gingival Interface**10. Management of medically compromised patients with special reference to HIV and Hepatitis****11. Implant supported restorations****12. Occlusion****Paedodontics**

1. Child management in dental practice
2. Prevention of Dental Disease
 - a) Prenatal Counseling
 - b) Oral prophylaxis
 - c) Fluoride administration
 - d) Dietary management
 - e) Diet counseling
 - f) Home care
3. The Acid etch Technique in caries prevention
4. Pit & Fissure Sealants & Preventive resin restorations
4. Radiology
5. Problem of Pain & Sedation
6. Periodontal disease in children
7. Injury to the primary & permanent teeth
8. Pulp therapy for the primary & young permanent teeth
 - Apexification
 - Apexogenesis
9. Restorative dentistry for the primary dentition
10. Anesthesia
11. Oral habits
12. Space maintenance in the primary dentition
13. Treatment planning & interceptive orthodontics
 - a) Rampant caries
 - b) Fluorides
 - c) Treatment of handicapped children

Endodontics

1. Diagnostic Procedures.
 - History
 - Clinical examination
 - Therapeutics
2. Clinical Classification of pulpal & periapical disease
 - Reversible pulpitis.
 - Irreversible pulpitis.
 - Acute apical periodontitis.
 - Acute apical abscess
 - Chronic apical periodontitis
3. Local Anesthesia
4. Instruments
5. Internal Morphology & Access opening
6. Pulpotomy – diagnostic & working length, cleaning filing, shaping
7. Bio-mechanical canal preparation etc.
8. Irrigants & intra canal medicaments .
9. Root canal sealers & obturation.
10. Failures in endodontics
11. Surgical Endodontics & Re-treatment
12. Endo – perio lesions
13. Internal, external resorption
14. Radiographic Analysis.
15. Dental emergency
16. Sterilization and asepsis
17. Traumatic injuries
 - Crown fracture
 - Root fracture
 - Displacement
 - Avulsion

Crowns

1. Terminology, Indications & Contra indications
2. Diagnosis & Treatment Planning
3. Basic Principles of preparation
4. Procelain Jacket Crowns
 - Indications & Contraindications, Clinical assessment, and steps of preparation.
5. Procelain Fused to metal crowns
 - Indications, Contraindications
 - Clinical assessment
 - Steps of preparation

6. Full Crowns
 - Indications, Contraindications
 - Clinical assessment
 - Steps of preparation
7. Fluid control & soft tissue management
8. Electrosurgery Indications, Contra indication & Technique
9. Post & Core crowns
10. Impressions & Impression materials
11. Clinical Procedures
12. Laboratory Technique for
13. Porcelain veneers
14. Inlays Onlays.
15. CAD-CAM
16. Occlusion

LIST OF OPERATIVE DENTISTRY BOOKS

1. The Art & Science of Operative Dentistry by Sturaurant.
2. Pickardards Manual of Operative Dentistry by EAM Kidd.
3. Fundamentals of Operative Dentistry by Schwartz
4. Harty's Endodontic in Clinical Practice by T.R. Pittford.
5. Pathway of the Pulp by Cohen.
6. Paediatric Dentistry Infancy through Adolesurse by Pinkham.
7. Essentials of Dental Radiography & Radiology by Frickwhaites
8. Planning & making crowns and bridges by B.G.Smith.
9. Tillman's principles of crowns and bridges.
10. Atlas of tooth preparation for crowns and bridges by Shillen berg.

C: ORAL AND MAXILLOFACIAL SURGERY

1. Dento-alveolar Surgery

- a. Sterlization
- b. Local Anaesthesia
- c. Exodontia
- d. Impactation
- e. Elevators.
- f. Pre-prosthetic Surgery
- g. Surgical Aid to Orthodontics

2. Maxillary Antrum

Diseases, Oro-antral fistula, foreign body.

3. Oro-facial Infections

Specific and non-specific, spread, principles of management

4. Cyst

Cyst of Soft and hard tissues of Oro-facial region and their management

5. Oncology

- a. Benign and malignant tumors of oral cavity, jaws and associated tissue: odontogenic tumors, squamous cell carcinomas, Lymphoma etc.
- b. Protocol of investigation including biopsy, X-Ray's, CT Scan, MRI, Bone Scan.
- c. Principles of different treatment modalities including: Surgery,
- d. Radiotherapy, Chemotherapy Cryotherapy, lasers.

6. Salivary Glands

Diseases of salivary glands including tumors, sialadenitis, sialithiases, means of investigation, management.

7. Temporo-mandibular joint

Surgical anatomy, diseases and disorders including ankylosis.

8. Fibro-osseous Lesion

Classification and management

9. Giant Cell Lesions

Types and management

10. Developmental anomalies

Introduction and management of cleft lip and palate.

11. Maxillofacial injuries

Surgical anatomy, first aid, treatment, soft tissue injuries of head and neck, dento-alveolar injuries, fractures of mandible fractures of mid-face, fractures of zygomatic complex, Nasoethmoid fractures, orbital involvement, head injuries, blood and fluid replacement.

12. Orthognathic Surgery

Introduction, evaluation and principles of treatment of facial disharmony including excess and deficiency of mandible and maxilla and craniofacial anomalies.

13. Management of medically compromised patients.

Outpatient and in-patient management. Especially emphasis on cardio-vascular, respiratory disorders, immunocompromised, blood dyscrasias.

14. Implantology

Introduction, indications, contra-indications, types, surgical techniques, after care.

Books Recommended:

1. Minor Oral Surgery by Geoffrey L. Howe.
2. An outline of Oral Surgery Part-I and II by Killey, Seward and Kay.
3. Killey's Fractures of Middle third of the facial skeleton
4. Killey's Fracture of the Mandible
5. Medical problems in Dentistry by Scully & Cawson
6. Contemporary Oral & Maxillofacial Surgery by Patterson, Ellis & Tucker.
7. Oral and Maxillofacial Surgery by LASKIN
8. Oral and Maxillofacial Surgery by Kruger.
9. Local Anaesthesia in Dentistry G.L. Howe, Whitehead
10. Law and Ethics in Dentistry J. Sear
11. General Anaesthesia & Sedation in Dentistry by Hill, Morris
12. Oral Medicine by W.R. Tyldesley
13. Burket's oral Medicine by Malcolm A. Lynch.
14. Oral Medicine and Pathology by Cawson and Odel
15. Oral & Maxillo Surgery by John Peddler
16. Oral & Maxillo Surgery by Archer.

D: ORTHODONTICS**1. Introduction**

- a. Definitions and Terminologies
- b. Types
 - i) Preventive
 - ii) Interceptive
 - iii) Corrective
- c. Aims and needs for Orthodontic Treatment

2. Growth and Development

- a. Basic concepts and definitions
- b. Variables affecting growth
- c. Prenatal and postnatal craniofacial growth
- b. Methods of studying growth
- c. Theories of growth
- d. Clinical application of growth and development in orthodontics
- e. TMJ Development

3. Occlusion

- a. Normal Occlusion
- b. Andrews Six Keys of Occlusion

4. Diagnostic Aids in Orthodontics

- a. History
- b. Clinical Evaluation
 - ii) Extraoral examination
 - iii) Intraoral examination'
- c. Radiographs
 - i) Periapical Xrays
 - ii) Orthopantomogram
 - iii) Occlusal Xrays
 - iv) Cephalometric Xray
 - (1) Identifying relevant anatomical structures and landmarks
 - (2) Tracing
 - (3) Analyses
- d. Tooth mass and size analyses
 - i) Cast analysis
 - ii) Bolton Analysis
 - iii) Mixed Dentition analysis
- e. Formulation of problem list

5. Dental Radiology

- a. Roentgen Anatomy of teeth, jaws and T.M.Joints
- b. Variations within normal limits, and abnormalities
- c. Different types of X-Rays machines
- d. Varieties of X-Ray Films: Extra Oral, Intra oral, Bite wing and Occlusal
- e. Film taking and exposure procedures
- f. Film development techniques
- g. Indications and uses of dental radiology
- h. Interpretation of films
- i. Radiation Hazards

6. Development of dentition and occlusion

- a. Prenatal development of dentition
- b. Features of Primary dentition
- c. Mixed dentition period
- d. Permanent dentition period
- e. Dimensional changes in dental arch
- f. Variations in development including size, form, number and position
- g. Factors affecting development.

7. Malocclusion

- a. Definitions
- b. Classification

8. Etiology of Malocclusion

- a. Local factors
- b. Heredity
- c. Environmental Factors

9. Preventive and Interceptive Orthodontics

- a. Diagnosis and Management of Habits
- b. Space supervision
- c. Space maintainers
- d. Space regainers
- e. Serial Extractions

10. Bone metabolism

- a. Normal Structure of Periodontal Ligament and Bone
- b. The role of bone in eruption and stabilization
- c. Effects of Orthodontic force
- d. Factors affecting tooth movement

11. Biomechanics

- a. Concepts, Types and Control of Anchorage
- b. Types of Wires and Alloys used in orthodontics
- c. Ideal properties of Orthodontic wires and comparison of different alloys

12. Retention and relapse

- a. Concepts of retention and relapse
- b. Occlusal Stability and factors related to retention
- c. Strategies of management.

13. Removable appliances

- a. Functional appliances
 - i) Types
 - ii) Indications
 - iii) Construction
- b. Introduction to various extraoral appliances for tooth movement
- c. Expansion appliances

14. Fixed appliances

- a. Introduction and background of different systems
- b. Indications and drawbacks
- c. Components and its accessories
- d. Edgewise and Straight Wire systems
- e. Bonding and Banding materials

15. Treatment Planning

- a. Non-skeletal problems including Class I malocclusion, crowding, spacing, crossbite, open bite, deepbite
- b. Skeletal problems
- c. Class II
 - i) Division 1
 - ii) Division 2
- d. Class III
- e. Extractions in Orthodontics
- f. Adjunctive treatment goals and principles

16. Surgical Orthodontics

Indications

17. Cleft Lip and Palate

Etiology & Clinical Features

18. Practical and Clinical Orthodontics

1. Wire bending exercises including
 - a. Adams clasp
 - b. Labial Bow
 - c. Canine retractor
 - d. Cantilever and Z spring
 - e. Arch wire fabrication
2. Making of removable appliances
3. A comprehensive orthodontic case presentation of a non-skeletal malocclusion.
4. History
5. Examination
6. Cast analysis
7. Ceph Analysis
 - a) Diagnosis
 - b) Suggested Treatment Plan
 - c) Mixed dentition analysis
8. Fixed Appliance

Books Recommended

1. Contemporary Orthodontics, Profit
2. Introduction to Orthodontics, Luar Mittehels
3. Hand Book of Orthodontics, Robert-E-Moyers